

What is claimed is:

1. A charging circuit for controlling a system charging parameter provided to a host of batteries, wherein said host of batteries comprises at least a first battery and second battery that may be coupled in parallel, said charging circuit comprising:

a first path configured to monitor a first battery charging current level provided to said first battery;

a second path configured to monitor a second battery charging current level provided to said second battery; and

a regulating circuit configured to reduce said system charging parameter provided to said host of batteries if said first charging current exceeds a first predetermined maximum charging current level or said second charging current exceeds a second predetermined maximum charging current level.

2. The charging circuit of claim 1, wherein said first predetermined maximum charging current level is substantially equal to said second predetermined maximum charging current level.

3. The charging circuit of claim 1, further comprising:

a third path configured to monitor a first battery charging voltage level provided to said first battery; and

a fourth path configured to monitor a second battery charging voltage level provided to said second battery, wherein said regulating circuit is configured to reduce said system charging parameter provided to said host of batteries if said first charging voltage level exceeds a first predetermined maximum charging voltage level or said second charging current voltage level exceeds a second predetermined maximum charging voltage level.

4. The charging circuit of claim 3, wherein said first predetermined maximum charging voltage level is substantially equal to said second predetermined maximum charging voltage level.

5. The charging circuit of claim 1, wherein said first path comprises a first error amplifier configured to receive a first monitoring signal representative of said first battery charging current level and a first comparison signal representative of said first predetermined maximum charging current level, and to provide a first control signal to said regulating circuit based on a difference between said first monitoring signal and said first comparison signal, and wherein said second path comprises a second error amplifier configured to receive a second monitoring signal representative of said second battery charging current level and a second comparison signal representative of said second predetermined maximum charging current level, and to provide a second

control signal to said regulating circuit based on a difference between said second monitoring signal and said second comparison signal.

6. A method for controlling a system charging parameter provided to a host of batteries, wherein said host of batteries comprises at least a first battery and second battery that may be coupled in parallel, said method comprising:

monitoring a first battery charging current level provided to said first battery;

monitoring a second battery charging current level provided to said second battery; and

reducing said system charging parameter provided to said host of batteries if said first charging current level exceeds a first predetermined maximum charging current level or said second charging current level exceeds a second predetermined maximum charging current level.

7. The method of claim 6, wherein said first predetermined maximum charging current level is substantially equal to said second predetermined maximum charging current level.

8. The method of claim 6, further comprising:

monitoring a first battery charging voltage level provided to said first battery;

monitoring a second battery charging voltage level provided to said second battery; and

reducing said system charging parameter provided to said host of batteries if said first charging voltage level exceeds a first predetermined maximum charging voltage level or said second charging voltage level exceeds a second predetermined maximum charging voltage level.

9. The method of claim 8, wherein said first predetermined maximum charging voltage level is substantially equal to said second predetermined maximum charging voltage level.

10. A charging circuit for regulating an output parameter of a DC to DC converter, said output parameter of said DC to DC converter providing power to a host of batteries, wherein said host of batteries comprises at least a first battery and second battery that may be coupled in parallel, said charging circuit comprising:

a first path configured to monitor a first battery charging current level provided to said first battery;

a second path configured to monitor a second battery charging current level provided to said second battery;

a third path configured to monitor a first battery charging voltage level provided to said first battery;

a fourth path configured to monitor a second battery charging voltage level provided to said second battery; and

a regulating circuit configured to reduce said output parameter of said DC to DC converter if one of said first battery charging current level, said second battery charging current level, said first battery charging voltage level, and said second battery charging voltage level exceeds an associated predetermined maximum level when said first battery and said second battery are coupled in parallel.

11. An electronic device comprising:

a power management unit configured to provide an output signal representative of at least a first predetermined maximum charging current level and a second predetermined maximum charging current level;

a host of batteries comprising at least a first battery and a second battery coupled in parallel;

a charging circuit for controlling a system charging parameter provided to said host of batteries, said charging circuit comprising:

a first path configured to monitor a first battery charging current level provided to said first battery and compare said first battery charging current level to said first predetermined maximum charging current level;

a second path configured to monitor a second battery charging current level provided to said second battery and compare said second

battery charging current level to said second predetermined maximum charging current level; and

a regulating circuit configured to reduce said system charging parameter provided to said host of batteries if said first charging current exceeds said first predetermined maximum charging current level or said second charging current exceeds said second predetermined maximum charging current level.

12. The electronic device of claim 11, wherein said output signal from said power management unit comprises an analog signal.

13. The electronic device of claim 11, wherein said output signal from said power management unit comprises a digital signal.

14. The electronic device of claim 13, wherein said charging circuit further comprises:

a digital interface configured to receive said digital signal from said power management unit and provide an interface output signal; and

a DAC configured to receive said interface output signal and convert said signal to an analog signal representative of said interface output signal.

15. The electronic device of claim 14, wherein said charging circuit further comprises a multiplexer to separate said analog signal into a plurality of analog signals representative of at least said first predetermined maximum charging current level and said second predetermined maximum charging current level.

16. An electronic device that may be powered by one or more of a host of rechargeable batteries or a DC power source, said electronic device comprising:
a power management unit (PMU) configured to run a power management routine;

a charging circuit configured to control charging of said host of rechargeable batteries, wherein said host of batteries comprises at least a first battery and a second battery coupled in parallel, said charging circuit comprising: a first path configured to monitor a first battery charging current level provided to said first battery and compare said first battery charging current level to said first predetermined maximum charging current level; a second path configured to monitor a second battery charging current level provided to said second battery and compare said second battery charging current level to said second predetermined maximum charging current level; and a regulating circuit configured to reduce said system charging parameter provided to said host of batteries if said first charging current exceeds said first predetermined maximum charging current level or said second charging current exceeds said second predetermined maximum charging current level; and

a selector circuit configured to select at least one of said DC source and said host of batteries in response to a PMU output signal from said PMU.

17. The electronic device of claim 16, wherein said charging circuit and said selector circuit are integrated onto one integrated circuit.